

## REMARKS

Claim 14 has been amended and new claim 33 has been added. Claims 14-33 remain in the application.

Basis for the Amendment to claim 14 is found in the specification at page 8, lines 28-29, and basis for new claim 33 is found in the specification at page 19, lines 13-15.

JP '491 (copy of the automatic translation of which, as available on the Japanese Patent Office website, is enclosed) discloses a porous polyurethane foam covered with a polypyrrole layer, which is prepared by a process comprising the steps of first conducting an oxidizing pre-treatment by immersing the foam in a ferric chloride solution, then contacting the foam with pyrrole vapor, such as to form a chemically oxidative polymerisation layer of pyrrole, and rinsing with water (see that document in particular the Abstract and Example 1). The thickness of the polymerisation layer of pyrrole may be increased, e.g. from 1 to 2  $\mu\text{m}$ , by electrolytic deposition-polymerisation of pyrrole using acetonitrile as a solvent (see that document, in particular the Abstract and Example 2).

The complex porous structure of reticulated material of the invention is produced by a different process. The latter comprises an oxidising pre-treatment using a solution containing permanganate/manganate salts and/or cerium IV compounds, a rinsing and drying step absent from JP'491, and a monomer depositing step in wet phase followed by oxidation doping of the monomer into an electrically conductive polymer. As stated in the specification (see e.g. page 7, lines 6-11), each of those steps, and in particular the rinsing step is important as regards the quality of the premetallization layers obtained. It is "indispensable that deposition of the monomer, before its later conversion into a conductive polymer, must have taken place over the entire surface of the fibers or openings, without clogging the surface and internal porosity".

Using the process as specified in claim 14 results in a "homogeneous and continuous coating of conductive polymer on the openings of the structure", which an important non obvious structural feature differentiating the complex porous structure of that claim from JP'491. That statement is supported by the Declaration of Mr. Jacques DONIAT (copy of which is

attached) which was filed for the parent application No. 08/691,241, now US Patent No. 6,290,832. That Declaration shows that the pre-metallizing treatment of JP'491 produces a "not continuous" deposit, as seen by microscopic observation, and a foam having a resistance between 150 and 250  $\Omega$  square, resulting after nickel electrolytic deposition in an electrode reaching only 12 A intensity after 5 minutes of current application, whereas the pre-metallizing treatment of claim 14 produces a "homogeneous and perfectly continuous" polypyrrole deposit, as seen by microscopic observation, and a foam having a resistance between 15 and 22  $\Omega$  square, resulting after nickel electrolytic deposition in an electrode reaching 40 A intensity after 22 seconds of current application, which intensity could be maintained for 5 minutes.

Starting from JP'491, there is no hint in the prior art, and in particular the references cited by the Examiner, as to the solution of the invention, namely performing the pre-metallizing steps specified in claim 14.

He et al. disclose a process of manufacturing a conductive polyurethane foam for use as an antistatic material. That process comprises the steps of coating the cells of a continuous foaming type polyurethane foam with an oxidizer solution, which may contain permanganate salts, removing the solvent from the oxidizer solution by vacuum-drying, depositing and polymerizing in vapor phase a polymerizable compound such as pyrrole by reaction with the oxidizer present on the surface of the polyurethane foam cells, extracting by dipping the polyurethane foam in an organic solvent the unreacted portion of that polymerizable compound and that oxidizer, and vacuum-drying.

The pre-metallizing process as specified in claim 14 differs from the process of He et al. in that there is a rinsing step after the oxidizing pre-treatment, and that the monomer depositing step is carried out in wet phase instead of vapor phase. Those differences are important as regards the quality of the conductive polymer layer obtained. In spite of that reference mentioning a "continuous conductive film" (suitable for use as electrostatic material) being obtained, the process disclosed therein does not allow to obtain a "homogeneous and continuous

coating of conductive polymer on the openings of the structure” as specified in claim 14, suitable for subsequent electroplating.

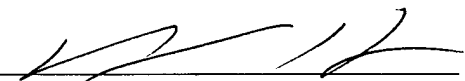
Free describes a intrinsically conductive polyurethane foam for use as an antistatic material, which is prepared by a totally different process from that specified in claim 14. That process involves reacting a polyol and an isocyanate in presence of a charge transfer agent such as tetracyanoethylene, picric acid or analogs thereof. No monomer such as pyrrole is deposited and polymerized on the surface of the polyurethane base structure. There is therefore technical incompatibility in combining the teaching of Free with that of JP’491 or He et al.

In view of this Amendment, it is respectfully submitted that claims 14-33 are in condition for allowance and favorable action is most earnestly solicited.

Respectfully submitted,

Bernard BUGNET et al

10-2-03  
Date

By:   
Richard L. Fix  
Reg. No. 28,297

STURM & FIX LLP  
206 Sixth Avenue, Suite 1213  
Des Moines, Iowa 50309-4076  
Phone: 515-288-9589  
Fax: 515-288-4860